

CHAPTER 1 INVENTORY

The initial step in the preparation of an airport master plan update (AMPU) is the collection and identification of information pertinent to Skyhaven Airport, including relevant information from the previous Master Plan. There have been changes in aviation activity, services, and tenants at Skyhaven Airport, as well as some of the airport facilities, since the last Master Plan was prepared in 2001. There have also been changes in the general aviation industry nationally over that period as well. The inventory contains data pertaining to existing airport facilities, aviation activity levels, airport tenants, industry trends, and on-airport environmental conditions.

1.1 FAA Design Standards

The FAA has established design standards for airports which are presented in advisory circulars, including AC 150/5300-13, *Airport Design*. Almost all of the facilities at Skyhaven Airport meet or exceed current FAA airport design standards for ARC B-I (**Table 1-1**).

Many of FAA's airport design criteria are based on accommodating the critical design airplane. The FAA notes that "federally funded projects require that critical design airplanes have at least 500 or more annual itinerant operations at the airport (landings and takeoffs are considered as separate operations) for an individual airplane or a family grouping of airplanes."²

Because Skyhaven Airport does not have an air traffic control tower, the number of aircraft operations was estimated based on input from airport users, the former fixed base operator, and the NHDOT.

At Skyhaven Airport, the critical design airplane is a group that includes most single and multi-engine piston airplanes, represented by the Cessna 172, Cessna 182, Piper Cherokee, Beech Bonanza, Beech Baron, and Piper Aztec to name a few (see **Figure 1-1**). The majority of operations at Skyhaven Airport in 2008 were conducted by piston engine aircraft that fall within the FAA's ARC of B-I (wingspan up to but not including 49 feet, and approach speeds between 91-120 knots). Certain turboprop aircraft and models of Cessna Citations also fall within this category.

The 2001 AMPU noted that the existing critical design aircraft was the Beech King Air 200; a 10 seat twin-engine turboprop that has a maximum gross takeoff weight of 12,500 lbs. Skyhaven Airport currently meets the FAA's design standards for the King Air 200 (ARC B-II)³, and can therefore accommodate this family of aircraft. However, the number of operations by those type of aircraft at Skyhaven Airport are currently well below the FAA's criteria for designation as critical design airplane.

² Source: FAA Advisory Circular 150/5325-4B, Runway Length Requirements for Airport Design, Chp. 1, para. 102.

³ Airport reference code is based on the critical design airplane wingspan and approach speed. Approach category B airplanes have approach speeds of 91 knots but less than 121 knots. Design Group II airplanes have wingspans of 49 ft. up to but not including 79 ft.

Table 1-1

Skyhaven Airport Facilities		
<u>Airport</u>	<u>Design Standard</u>	<u>Existing Condition</u>
Airport Reference Code (ARC)	B-I	B-I
Critical Design Aircraft	Beech Baron	Beech Baron
FAA NPIAS + NH SASP Role	General Aviation	General Aviation
Runway CL – Taxiway CL	150'	240'+
Runway Length	4,001'	4,001'
Runway Width	60'	100'
Runway Shoulder Width (turf)	10'	10'
Runway Object Free Area (ROFA)	200'W x 240'L	500'W x 300'L
Runway Safety Area (RSA)	150'W x 300'L	150'W x 300'L
Runway CL – Aircraft Parking	125'	300'+
Runway CL – Hold Short Line	125'	150'
Runway lights	Medium intensity	Medium intensity
Instrument Approach: Type & Lowest Minimums	Not Required	Rwy 33: Non-Precision – 438' & 1 mile Rwy 15: Visual
Runway approach light system	Not required	None
Runway Protection Zone (RPZ) - Small Aircraft Exclusively Not Lower than 1 mile	1,000'L x 250' Inner Width x 450' Outer Width	1,000'L x 250' Inner Width x 450' Outer Width
Taxiway Width	25'	35'
Taxiway Safety Area Width	49'	79'
Taxiway Object Free Area Width	89'	131'
Runway Pavement Weight Bearing	30,000 lbs. SW	30,000 lbs. SW
Airport Lighting:		
Runway	Medium Intensity	Medium Intensity
Runway End Identifier Lights	Yes	Runway 33
Taxiway	Medium Intensity	Medium Intensity
Rotating Beacon	Yes	Yes

Notes:

Information current as of August 2008. Airport reference code (B-II Small) source: 2001 Airport Master Plan Update. Small = 12,500 lbs. maximum gross weight or less.
 Lowest existing instrument approach minimums (GPS 33) = 1 mile viz. + 438' Height Above Touchdown (HAT)
 Runway CL – Taxiway CL distance varies. Minimum distance shown.
 Runway 33 CL -Aircraft parking distance varies. Minimum distance shown.
 Runway length source: FAA AC 150/5325-4B, Runway Length Requirements for Airport Design, Chapter 2,
 Runway Lengths For Small Airplanes With Maximum Certificated Takeoff Weight Of 12,500 Pounds or Less,
 Para. 205, Figure 2-1. Small Airplanes with Fewer than 10 Passenger Seats.
 SW = single wheel

Figure 1-1 Typical General Aviation Aircraft at Skyhaven Airport



The physical conditions at Skyhaven Airport that do not meet current FAA design standards include:

- Ground penetrations to the primary surface of Runway 15-33. The primary surface is defined in Federal Aviation Regulation Part 77 and is centered on the runway centerline at the same elevation as the runway centerline. The primary surface is 500 feet wide and extends 200 feet beyond each runway end (**Figure 1-2**).
- Tree penetrations to the transitional surface of Runway 15, and to the approach and transitional surface of Runway 33. Those surfaces are defined in Federal Aviation Regulation Part 77, Objects Affecting Navigable Airspace (**Figure 1-2**). Some have been mitigated by obstruction lights on the west side of the runway.

The existing runway width is 100 feet, which exceeds the current FAA standard of 60 feet. Airport facilities may exceed FAA standards, and a modification to standard is not required from FAA. However, when Runway 15-33 is reconstructed, FAA would issue a grant based on reconstructing the runway to accommodate the design standards for the ultimate critical design aircraft.

While the FAA may issue a modification to standards to allow non-standard conditions when there is an equivalent level of safety provided, there are no modifications to standards issued by FAA for Skyhaven Airport.

1.2 Skyhaven Airport Ownership and Management

Skyhaven Airport is owned by the NHDOT. At the direction of the state legislature, the NHDOT negotiated a lease with the Pease Development Authority (PDA) under which the PDA will operate Skyhaven Airport. The current agreement extends through mid-February 2009, and the NHDOT will remain the owner of the airport and its sponsor through this period.

Ossipee Valley Aviation (OVA) was the FBO at Skyhaven Airport between 2001 and 2008. The NHDOT and PDA are currently responsible for the day-to-day management functions, and the NHDOT and PDA are jointly working to find a new FBO for Skyhaven Airport.

The SAOC includes representatives from the NHDOT, the City of Rochester, the City of Dover, Town of Somersworth, the state legislature, the PDA, and airport tenants. New Hampshire state law⁴ states that the “SAOC shall:

- I. Be responsible for the oversight of all operations of Skyhaven Airport, including lease and use of all airport property.
- II. Prepare and submit an operating and a capital budget to the director of aeronautics, rail, and transit, who shall submit such budget in accordance with RSA 9.
- III. Have access to all books, records and other data relevant to all operations of Skyhaven Airport.
- IV. Advise the director of aeronautics, rail, and transit of issues relating to all operations of Skyhaven Airport.”

1.3 Existing Aviation Activity at Skyhaven Airport (DAW)

Based Aircraft

In 2008, the number of based aircraft at DAW was listed by the FAA as 118 (**Table 1-2**). Of the 118 based airplanes, 82% are single-engine piston (97 airplanes) and 5% are multi-engine piston (6 airplanes). In addition, there are 12 ultralights and two helicopters listed as based at Skyhaven Airport. According to the NHDOT records, there are 41 aircraft in 37 hangars at Skyhaven Airport.

The 2001 AMPU provided a history of based aircraft at Skyhaven Airport from 1984 to 2000, relying on several sources, including the 1994 Master Plan Update, FAA Airport Master Record Form 5010, and NHDOT records (**Chart 1-1**). Between 2000 and 2008 based aircraft at Skyhaven Airport increased by 122%, from 53 to 118 based aircraft, an increase of 65 airplanes.

⁴ Source: NH Revised Statutes Annotated (RSA), Title XXXIX, Aeronautics, Chapter 422, New Hampshire Aeronautics Act, Section 422:37, Skyhaven Airport

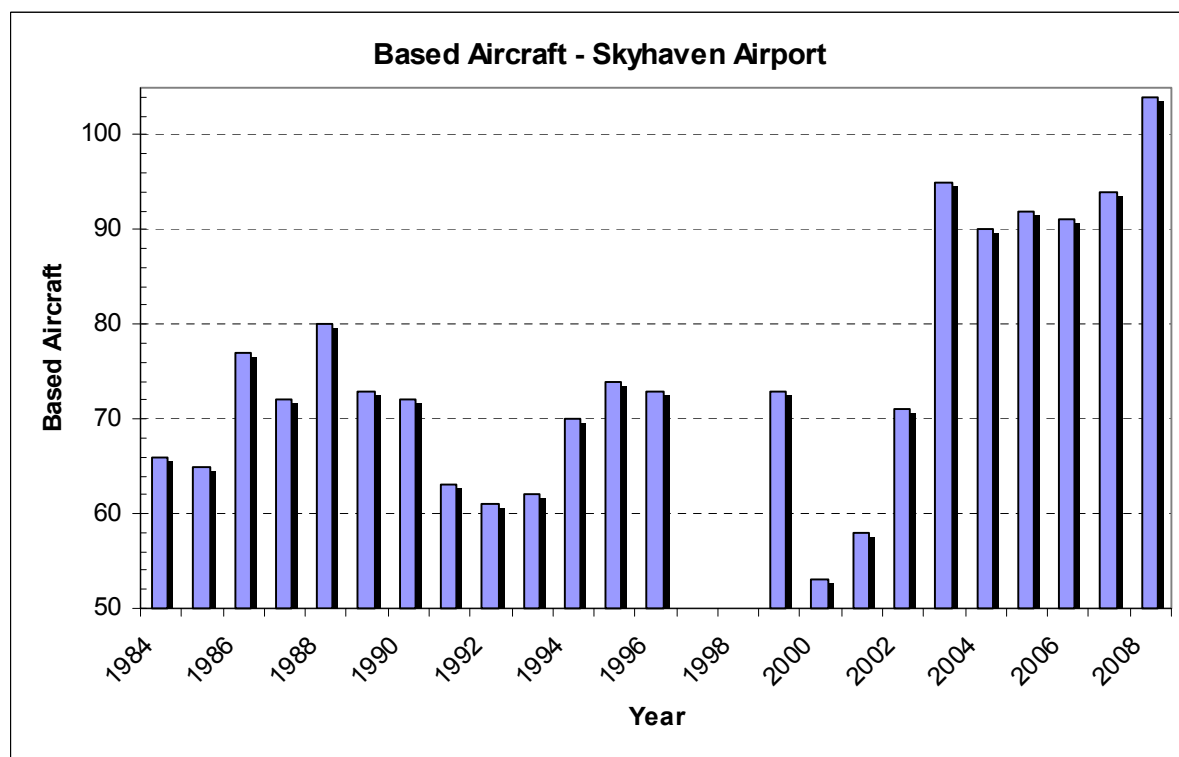
The increase in based aircraft coincided with OVA's move to Skyhaven Airport as the FBO in 2001. In addition, Lakes Region Airport in Wolfeboro closed in that period, requiring their based aircraft to find new homes, some of which moved to Skyhaven Airport. In addition, some GA aircraft previously based at Manchester-Boston Regional Airport also moved to Skyhaven Airport.

Table 1-2
Based Aircraft and Operations – Skyhaven Airport
August 2008

Based Aircraft (Actual)		Aircraft Operations (Estimated)		
Single Engine Piston	97		<u>Annual</u>	<u>Avg. Daily</u>
Multi-Engine Piston	6	Air Taxi	0	0
Jet	1	G A Local	12,000	33
Ultra-Light	12	G A Itinerant	5,000	13
Helicopter	2	Military	0	0
Total	118	Total	17,000	46

Source: FAA Airport Master Record Form 5010, August 2008

Chart 1-1

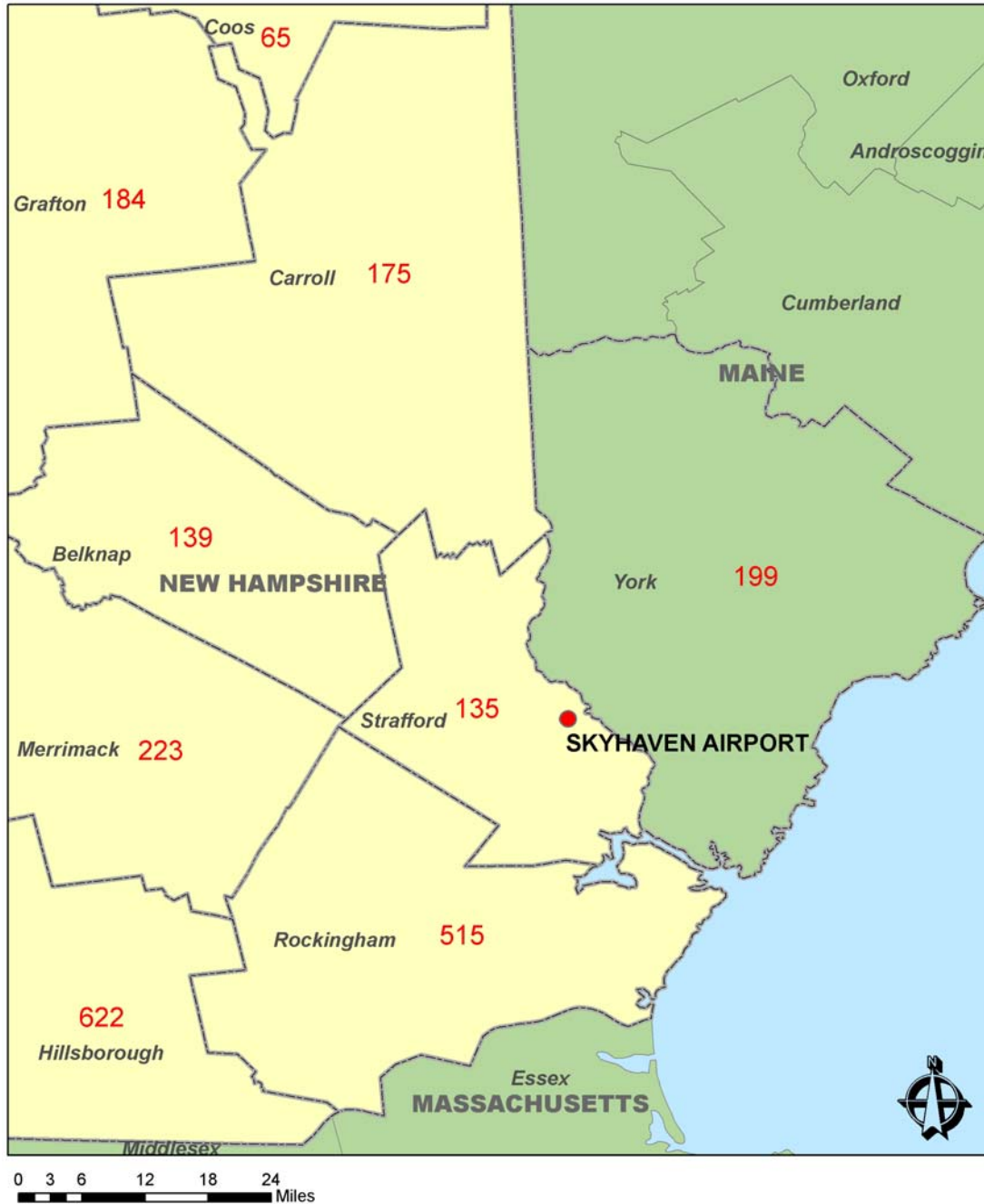


Sources: NHDOT, Airport Master Plan Update 2001, and FAA Airport Master Record, 2008

Aircraft owners are required to register their aircraft with the FAA, and notify the FAA of any change in aircraft ownership. FAA aircraft registration records indicate there are 135 aircraft in Strafford County (**Figure 1-3**). However, registration data lists the address of the aircraft owner, not where the airplane is actually based or operating. As a result, some

of the owners of based aircraft at Skyhaven Airport may live in adjacent counties in New Hampshire or Maine, or even in Massachusetts. In addition, some aircraft owners in Strafford County may base their aircraft in other counties or other states.

Figure 1-3



FAA REGISTERED AIRCRAFT BY COUNTY

Aircraft Operations

The FAA estimated there were 17,000 aircraft operations at Skyhaven Airport in 2007 (**Table 1-2**). By definition, an aircraft operation is a takeoff or landing. That represents an average of 46 aircraft operations per day throughout the year.

By comparison, the 2001 Airport Master Plan Update estimated that there were 18,592 aircraft operations in 2000 (an average of 51 aircraft operations per day), although the 2001 AMPU noted that some sources thought the actual number of aircraft operations was lower than that. Based on those estimates, there was an 8.6% decline in aircraft operations between 2000 and 2008. There was also a decline in the sale of both 100LL avgas and Jet-A fuel over the same period, which corroborates the declining aircraft operational counts at Skyhaven Airport.

More than 70% of the aircraft operations (approximately 12,000) were classified as local, which are defined as local aircraft operations within the airport's traffic pattern or the aircraft is known to be from within 20 miles of the airport. Less than 30% of the operations (approximately 5,000) were classified as itinerant, which are aircraft arriving from or departing to another airport greater than 20 miles from Skyhaven Airport. The majority of aircraft operations were conducted by single-engine piston airplanes.

Data acquired from FlightAware, a flight-tracking company, shows that between July 1, 2007 and June 30, 2008 there were 306 documented arrivals and departures on instrument flight plans at Skyhaven Airport. The large majority of these aircraft operations were by piston-engine aircraft. There were six arrivals and six departures by turboprop aircraft, for a total of 12 turboprop aircraft operations at Skyhaven Airport during this period. In addition, there were five arrivals and five departures by corporate jets – a total of 10 corporate jet operations⁵.

The turboprops were Pilatus PC-12 and Beech 350 King Airs, and the corporate jets were Cessna Citations (CE-525 and CE-560). The longest non-stop flight departing from Skyhaven Airport was to DeKalb-Peachtree Airport, Atlanta, Georgia, (842 nm), and the longest non-stop arrival was from Tallahassee, Florida (1,004 nm). FlightAware does not document aircraft operations where instrument flight plans were not filed, so it is possible that additional operations by turbine powered aircraft were conducted at Skyhaven Airport on visual flight rules (VFR) flight plan or no flight plan.

Owners of the turboprops were listed by FlightAware as U-Haul Oregon, Pizzagalli Construction in Burlington, Vermont, Flagstone King Air Holdings, Rye, New Hampshire, and Angel Flight America; owners of the corporate jets included CitationShares, Farmington Aviation in Connecticut, DJW Air in Cambridge, Massachusetts, and Lewis Air Fleet in Ponte Verde Beach, Florida.

⁵ FlightAware tracks all aircraft on instrument flight plans even if they cancel their IFR clearance prior to landing and land under visual flight rules (VFR). However, if a flight diverted to another airport after cancelling IFR but prior to landing under VFR, FlightAware does not identify the new destination. FlightAware estimates that those diversions represent a small percentage of aircraft operations.

Based on discussions with the NHDOT, SAOC, and airport tenants, other companies and organizations that operate aircraft at Skyhaven Airport include Eastern Topographics, an aerial mapping company that bases its aircraft at Skyhaven Airport, and the Dartmouth-Hitchcock Advanced Response Team (DHART), which is based in Lebanon, New Hampshire, and operates a turbine-powered helicopter for emergency medical response.

As noted above, at Skyhaven Airport the critical design airplane is a group that includes most single- and multi-engine piston airplanes, including the Cessna 172, Cessna 182, Piper Cherokee, Beech Bonanza, Beech Baron, and Piper Navajo, to name a few (ARC B-I). Skyhaven Airport currently meets the FAA's design standards for the Beech King Air 200 (ARC B-II), and can accommodate small turboprop and corporate jet aircraft on a regular basis, although there are relatively few documented operations by those type of aircraft. Larger aircraft can be accommodated on an infrequent basis as conditions permit.

Hangars and Aircraft Tiedowns

All of the hangars at Skyhaven Airport are owned by the NHDOT and leased to tenants. There are 35 T-hangar units at the airport, all of which are occupied. There is a wooden shade structure (pole hangar) with five bays and there is a single hangar unit, all of which are occupied. The NHDOT estimates there are a total of 41 airplanes in the hangars. The NHDOT has a waiting list of 31 aircraft owners who would rent a hangar for their aircraft if and when one becomes available at Skyhaven Airport. Some of those airplanes are presently on tiedowns at Skyhaven Airport. The former FBO, OVA, also occupied a conventional hangar that is approximately 67' x 75' in size, which was used primarily for aircraft maintenance.

There are 28 paved aircraft tiedowns, and 20 turf aircraft tiedowns – a total of 48 aircraft tiedowns. The 118 based aircraft noted in the FAA Airport Master Record would represent the existing maximum storage capacity of the airport. Representatives of OVA indicated that the number of aircraft owners renting aircraft tiedowns has declined recently, although they did not have a specific number of airplanes that have left.

Fuel Sales

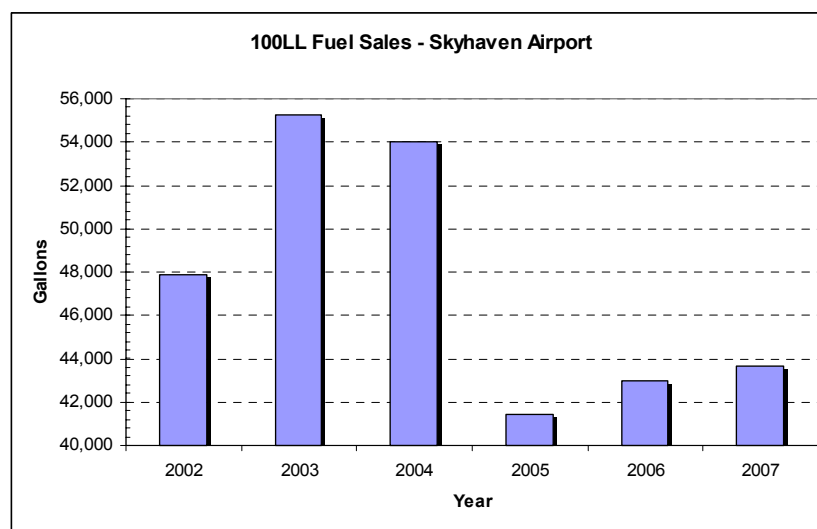
There is a 10,000-gallon underground storage tank for 100LL fuel at Skyhaven Airport, as well as a self-serve pump. There is also a 10,000-gallon underground storage tank for Jet-A fuel, also with a self-serve pump. Although records of the amount of fuel sold are maintained, the records do not identify how much fuel is bought by based versus itinerant aircraft operators at Skyhaven Airport.

Between 2003 and 2007, the number of gallons of 100LL fuel sold declined by 21% (**Table 1-3 & Chart 1-2**). Over the same period, aircraft operations decreased by approximately 8%. It is not clear if the decline in aircraft operations and fuel sales at Skyhaven Airport was due to lower itinerant or based aircraft operations, or whether all aircraft operations declined equally. Jet-A fuel sales experienced a 92% decline between 2004 and 2007 (**Chart 1-3**), and Jet-A is no longer sold at Skyhaven Airport. The lack of Jet-A fuel, as well as the lack of itinerant aircraft parking space, significantly constrains potential turbine-powered aircraft activity at Skyhaven Airport.

Table 1-3

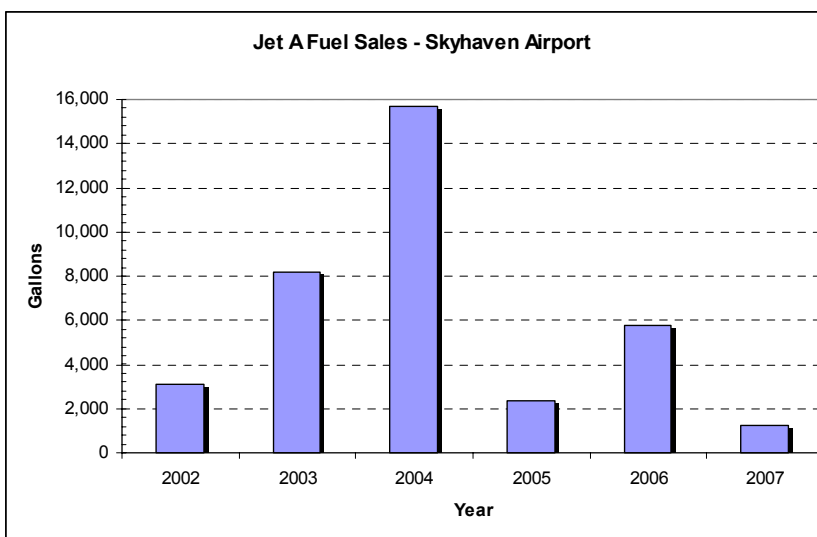
Fuel Sales – Skyhaven Airport		
CY	100LL (Gals.)	Jet-A (Gals.)
2002	47,886	3,076
2003	55,237	8,160
2004	53,989	15,665
2005*	41,457	2,386
2006	42,995	5,756
2007	43,676	1,231
Source: NHDOT * Data for 2005 includes only Jan-Sep		

Chart 1-2



Source: NHDOT. Note: Data for 2005 is only for January-September

Chart 1-3



Source: NHDOT. Note: Data for 2005 is only for January-September

As of late September 2008, the price of 100LL fuel at Skyhaven Airport was \$5.50/gallon (**Table 1-4**), which is slightly below the regional average (\$5.69/gallon). Three airports in the region have lower fuel prices than Skyhaven Airport (Sanford, Hampton, and Laconia). Although auto gas prices have dropped by more than 30% since late summer 2008, aviation fuel prices have experienced a relatively smaller decline.

Table 1-4

Regional Fuel Prices for 100LL Aviation Fuel

<u>Airport</u>	<u>AS</u>	<u>SS</u>	<u>FS</u>
Skyhaven	\$5.50		
Sanford		\$5.25	\$5.50
Portsmouth			\$5.40
Hampton	\$5.40		
Biddeford		\$5.69	
Concord			\$5.99
Laconia		\$5.49	\$5.95
Manchester			\$6.11
Portland Jetport		\$5.90	\$6.40
Boire Field			\$5.58
Lawrence			\$6.76
Region	<u>Low</u>	<u>High</u>	<u>Avg.</u>
	\$4.99	\$6.76	\$5.69

Source: Airmav.com – Sept. 2008

AS - assisted service

SS – self service

FS – full service

1.4 Airport Traffic Pattern Procedures

Skyhaven Airport, like the majority of airports in New Hampshire, does not have an airport traffic control tower. When aircraft are operating under visual meteorological conditions (VMC) at Skyhaven Airport, they make left-hand turns when taking off and landing on Runway 15, and right-hand turns when using Runway 33. Runway 33 accommodates the majority of aircraft operations and is the designated calm wind runway.

Pilots use a specified radio frequency known as the common traffic advisory frequency (CTAF - 122.7 MHz, also known as unicom) to advise other pilots of their position and intentions. Pilots are also able to turn on the runway lights using the radio transmitter on the CTAF frequency.

There is an automated surface observing system (ASOS) located on Skyhaven Airport that collects and disseminates current weather information to pilots. It transmits the weather data via radio on 135.275 MHz, and can also be accessed by telephone.

For pilots taking off and landing at Skyhaven Airport under instrument flight rules (IFR), the FAA's Boston Approach Control provides air traffic and radar tracking services. Pilots can obtain clearances for instrument flights by calling an FAA Flight Service Station by telephone or by radio (122.25 MHz) while on the ground at Skyhaven Airport. The FAA has published a procedure for aircraft departing IFR on Runway 33. The departure procedure was designed by FAA to help pilots safely avoid trees located to the north of the airport.

1.5 Skyhaven Airport Facilities – Existing Condition

The condition of each airfield facility is addressed separately, below. The assessment of the condition of the airport facilities was based on site visits and visual inspection, as well as input from the NHDOT and the SAOC. No testing or engineering analysis was performed on any of the airport facilities as part of this condition assessment. See **Appendix A** for photos of the airport facilities taken in August 2008, and **Appendix C** for a list of Skyhaven Airport's facilities and features on record with the FAA. In addition, the Existing Airport Layout Plan and Terminal Area Plan are attached as **Drawing No. 1** and **No. 2**, respectively.

- Runway 15-33 pavement is in fair condition with both longitudinal and transverse cracking. The runway pavement is 23 years old in 2008 and is in need of reconstruction. According to the FAA Airport Facility Directory, the pavement weight-bearing limit is 30,000 lbs. for aircraft with single-wheel landing gear configurations (also sufficient to accommodate most airport snow removal equipment).
- Parallel Taxiway A is a new taxiway that was constructed in 2008. The pavement and markings are in excellent condition. The taxiway edge lights and signage are also new.
- The terminal area tiedown apron, paved over 30 years ago, is in poor condition due to severe cracking, and is in need of reconstruction.
- The terminal building and associated utilities have on-going maintenance issues, some of which are due to basement flooding.
- The terminal building's auto parking lot is in poor condition – there are large cracks and loose pavement material that can damage vehicles and be hazardous for pedestrians. The parking lot is in need of reconstruction or rehabilitation.
- Approximately half of the 37 hangars are in good condition (building numbers 3 and 4), while other hangars are in fair condition (building numbers 1 and 2). The Pole Hangar appears to be in fair condition.
- Skyhaven Airport is presently connected to city water, and there are no issues with city water supply at the airport. The terminal building's existing septic system is

located south of Hangar 5 and is in good condition for its age. The terminal building's septic system could be connected to the new sewer line recently installed by the City of Rochester along Route 108 (Rochester Hill Road). There is city water at the snow removal equipment building, but no septic or sewer system.

- There are obstruction lights on four poles on the northwest side of the airport, which were replaced in 2005, and are in good condition.
- There are extensive wetlands around the runway and taxiway. There is a culvert under the access road to the adjacent Jackson property that is occasionally blocked by sticks, and small trees placed by beavers, which causes flooding adjacent to the culvert. Regular maintenance is required to keep this culvert free of debris. Generally, drainage around the terminal area, paved tiedowns, and T-hangars is good.
- There is perimeter fencing along the west and south sides of the airport, primarily along Route 108, Rochester Hill Road, and Airport Road, and there are nine gates in the fence.
- The FAA has published four instrument approaches to Skyhaven Airport: one straight-in GPS⁶ approach to Runway 33; one straight-in NDB⁵ approach to Runway 33; one circle-to-land approach using VOR/DME⁵ or GPS; and one circle-to-land using NDB or GPS (see **Appendix B** for recent instrument approach charts). The lowest approach minimums available are 1-mile visibility and 438' height above the runway threshold (HAT) using the GPS Runway 33 approach.

1.6 Environmental Conditions at Skyhaven Airport

Wetlands

Wetlands are the single largest sensitive environmental resource on Skyhaven Airport. On August 7, 2008, The Smart Associates conducted a field review of wetlands located at the airport in order to review and update the wetlands boundary (see **Appendix E** for a detailed description of the site visit, as well as photos and maps). In total, five wetland areas were field-verified during the field review.

Several changes in the wetland boundaries were noted at both ends of Runway 15-33, as shown on the Wetland Delineation Field Sketch Maps (Appendix E). Some changes in the wetlands were due, in part, to the recent taxiway construction project.

Wetland Functions and Values

Although a complete wetland function and value assessment was not completed during the August 2008 field review, it appeared that the functions and values of the wetlands within the study area have not significantly changed since the previous wetland review in 2001. In general, functions and values provided by the wetlands within the study area

⁶ GPS = Global Positioning System. NDB = Non-Directional Beacon. VOR/DME = very high frequency omni range / distance measuring equipment.

include groundwater recharge and discharge, flood storage, sediment and toxicant retention, nutrient removal, and wildlife habitat.

Endangered Species

A review of the New Hampshire Natural Heritage Bureau's (NHB) database indicated that there are no recorded occurrences of rare species or exemplary natural communities within the vicinity of Skyhaven Airport, as verified by correspondence from the U.S. Fish and Wildlife Service (also provided in **Appendix E**).

1.7 City of Rochester Zoning

The City of Rochester is responsible for adopting and enforcing the zoning ordinance and directing land use within the city boundary. The zoning districts in the vicinity of Skyhaven Airport, as provided by the City, and overlaid with the Federal Aviation Regulation (FAR) Part 77 imaginary surfaces are depicted in **Figure 1-4**.

The City's zoning ordinance addresses Skyhaven Airport and specifies height limits, approach zones, use restrictions, and also references FAR Part 77 (see **Appendix F** for pertinent excerpts from the zoning ordinance).